BY ORDER OF THE
COMMANDER AIR MOBILITY COMMAND

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Flying Operations

ACCESS TO THE AEROMEDICAL EVACUATION SYSTEM

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This pamphlet is designed to clarify the process to access the aeromedical evacuation (AE) system for U.S. military personnel in deployed locations. The focus is on ensuring access for personnel who may be in austere or bare-base environments, although it may also be used by embassy staff or other personnel requiring access to the AE system. Focal points of contact are outlined for Pacific Command, Southern Command, European Command, and Central Command areas of operation. Special patient preparation considerations and the necessary information to convey to the patient movement requirements center (PMRC) have been outlined for the user. This pamphlet is applicable to all Services and Reserve Components.

1. Introduction.

1.1. This pamphlet is intended to facilitate the movement of patients from austere and bare-base deployed locations and from countries where military medical facilities may not be available. Air Mobility Command (AMC) is designated the lead command for AE. The AE system uses fixed-wing aircraft to move patients and can be used in conjunction with other evacuation systems, such as casualty evacuation (CASEVAC) and medical evacuation (MEDEVAC - Army rotary-wing) when available.

1.2. The information contained in this pamphlet provides a simplified method for accessing the AE system, as well as covering some patient and equipment considerations. Finally, the updated listing of telephone numbers will facilitate easier access worldwide.

1.3. Definition of AE: The movement of patients by air transportation in fixed-wing aircraft, under the supervision of aeromedical evacuation crews, to and between medical treatment facilities.

1.4. Capabilities of the AE system:

1.4.1. Control of patient movement by fixed wing aircraft.

1.4.2. Specialized medical aircrew and augmentees.

1.4.3. Certified in-flight medical equipment.

1.4.4. Facilities located on or near air strips and air bases with limited medical care for patients in transit.

1.4.5. Communication network with en route medical facilities concerning patient transportation.

2. Access Process and Telephone Numbers.

2.1. For patient movement assistance within CONUS or USSOUTHCOM, contact the Global Patient Movement Requirements Center (GPMRC) at DSN 779-6241 or commercial (618) 229-6241 or 1-800-874-8966 (24-hour number). The GPMRC will obtain patient information, medically and administratively validate the requirement, determine destination options, and coordinate with the appropriate service component who then executes the patient movement mission.

2.2. If unable to contact the GPMRC, contact the Tanker Airlift Control Center AE Cell (TACC/XOGA) at DSN 779-1913 or commercial (618) 229-1913 (24-hour number). The TACC can also be reached at 1-800 AIR MOBL (also a 24-hour number). Ask to speak to someone in the AE Cell and explain that GPMRC was not contacted. The TACC AE Cell is responsible for the tasking, scheduling, execution, flight following, and recovery of AE missions. Once TACC has been contacted, a coordinated effort will begin to initiate procedures to obtain aircrews, equipment and aircraft.

2.3. Telephone numbers for the Theater Patient Movement Centers (TPMRC), which are located in Germany and Japan, are listed below. The function of the TPMRC basically mirrors the function of the GPMRC for patient movement within their respective theaters. They coordinate with the GPMRC and TACC for intertheater AE mission coordination and execution.

2.4. The TPMRC – Europe (TPMRC-E), located at Ramstein AB, Germany, communicates and coordinates patient movement requirements for USEUCOM (Europe/parts of Africa) and USCENTCOM (parts of Asia and Africa).

2.4.1. DSN 314-480-2264 or 8040; commercial 011-49-6371-47-2264 or 8040.

2.5. The TPMRC - PACOM, located at Yokota AB, Japan, communicates and coordinates patient movement requirements for their area of responsibility throughout Asia and the Pacific.

2.5.1. DSN 315-225-4700 or 4857; commercial 011-81-311-755-4700/4857

2.6. In austere conditions, any medical or AE element; AE liaison team (AELT), mobile aeromedical staging facility (MASF), or AE crew member may be contacted for assistance.

3. Equipment And Supply Considerations.

3.1. Several issues need to be taken into consideration when requesting aeromedical evacuation. The most important issue to ensure accurate, clear information is conveyed to the individual arranging the aeromedical evacuation mission. Let the patient movement clinical coordinator (PMCC) at the TPMRC or GPMRC know if:

3.1.1. You feel that a specific piece of equipment might be needed.

3.1.2. You want to swap equipment, or if you want to keep your own equipment.

3.1.3. The patient is on the only litter that you have and you want to retain the litter.

3.2. Equipment

3.3. The following equipment is carried on routine aeromedical evacuation mission (AFI 41-301, *Worldwide Aeromedical Evacuation System*):

3.3.1. Life-Pak 10, Cardiac Monitor and Defibrillator.

3.3.2. Life-Pak 10 Battery Support System.

3.3.3. Portable suction unit.

3.3.4. Pulse oximeter.

3.3.5. PT-LOX (10 liters of liquid oxygen per unit, 1 liter =804 gaseous), used if the aircraft being used does not have integral oxygen capability.

3.3.6. Frequency converter (for aircraft that do not deliver a 115 VAC/60HZ power source).

3.3.7. IV infusion pump.

3.3.8. Electrical cable assembly set (extension cords to access electrical power source).

3.3.9. Ambu-bags.

3.3.10. Intubation kit.

3.3.11. Emergency medications.

3.3.12. (ACLS) medication and equipment.

NOTE: Air Force AE squadrons only use in-flight medical equipment that has been approved by the Armstrong Laboratory for use in the AE system. If other equipment is necessary, let the PMCC know. Ventilators, backboards, traction devices or Stryker frame, decompression masks, chest tubes and drainage kits are available if required and adequate time is available for mission preparation.

3.4. Supplies.

3.4.1. Standardized inflight kits are available on each aeromedical evacuation mission. They include IV supplies, oxygen equipment, irrigation fluids, dressing supplies, Foley catheters, NG tubes, and very limited splint and immobilization supplies.

3.4.2. If additional supplies are needed, inform the PMCC at the PMRC. Additional supplies may include: burn packs, additional IV fluids, additional immobilization devices, cervical collars, and/or expansion of the ACLS/ATLS medications, narcotics, and equipment.

4. Patient Considerations.

4.1. The following are patient considerations and categories that should be used to inform the PMCC of the patient(s) status.

4.2. Patient Category:

4.2.1. Psychiatric.

4.2.2. Inpatient Litter.

4.2.3. Ambulatory patient.

4.2.4. Infant.

4.2.5. Outpatient.

4.2.6. Attendant.

4.3. Patient Movement Precedence (JP 4-02.2, *Joint Tactics, Techniques, and Procedures for Patient Movement in Joint Operation*):

4.3.1. Urgent: Immediate movement to save life, limb, or eyesight (movement as soon as possible).

4.3.2. Priority: Patients requiring prompt medical care not available locally, used when the medical condition could deteriorate and the patient cannot wait for routine evacuation (movement within 24 hours).

4.3.3. Routine: Patient requires medical evacuation, but their condition is not expected to deteriorate significantly (movement within 72 hours)

NOTE: Relay any unusual circumstances or requirements needed to send this patient to a particular destination. The PMCC will respond accordingly.

4.4. Patient Information (See **Attachment 2**)

4.5. The following is not intended to direct how patient care is administered. These are simply some considerations. When communicating with the PMCC, have as much of the patient information readily available as possible and be brief:

4.5.1. Why the patient is being evacuated, i.e. what is clinically/medically wrong with the patient?

4.5.2. Brief synopsis of current history, if known.

4.5.3. Past significant medical history, including allergies. If none, state so.

4.5.4. Current knowledge of patient medications, if known, include available documentation. If none, state so.

4.6. Patient Preparation/Documentation:

4.6.1. Document on one of the following forms, if available:

4.6.1.1. AF Form 3899, AE Patient Record

4.6.1.2. DD Form 1380, US Medical Card

4.6.1.3. DD Form 600, Chronological Record of Medical Care

4.6.1.4. DD Form 602, Patient Evacuation Tag or AF Form 3899, AE Patient Record

4.6.1.5. Any other available clinical documentation format

5. Preflight Considerations.

5.1. Weapons and Ammunition

5.1.1. It must be understood that weapons and ammunition will be an issue for the AE crew when trying to get patients onto the aircraft. The easiest way to avoid controversy with the AE crew and the other aircrew members is to anti-hijack the individual. To accomplish this, do the following:

5.1.1.1. Separate the ammunition from the weapon. The loadmaster (if there is no loadmaster, check with the Aircraft Commander, or Flying Crew Chief) will secure the ammunition. Make

sure the weapon has been CLEARED! If time permits, label the weapon CLEARED and identify the owner.

5.1.1.2. Remove any explosives from patient and patient's bags/gear prior to entry to the plane. Make sure to check the patients' uniform pockets for C-4, detonators, ammunition, etc.

5.1.1.3. Secure knives with the loadmaster or designated individual in a similar fashion as the ammunition.

5.1.1.4. Search bags and rucksacks for ammunition, knives, and explosive materiel; take appropriate action as described above.

5.1.1.5. If possible, leave ammo/explosives with the unit's weapons courier.

5.1.1.6. Civilian air ambulance companies will not take weapons, ammunitions or explosives. The unit is responsible to secure these or arrange to leave behind.

5.2. Physiological Stresses of Flight. Patients in the AE environment are more susceptible to the physiologic stresses encountered at altitude. These factors must be considered prior to moving the patient. Clinical factors include patency of the respiratory passages, neuromuscular function, rate and depth of respiration, adequate blood flow and diffusion of oxygen at the alveolar and cell level, an adequate hemoglobin level, and a functioning respiratory center. The temperature, pressure, volume, and relative mass of a gas influence the body's response to barometric pressure changes as the aircraft changes altitude.

5.2.1. Barometric Pressure Changes. Barometric/atmospheric pressure is the pressure exerted against an object by the atmosphere. On ascent gas expands and on descent gas contracts. Trapped or partially trapped gases within body cavities (GI tract, lungs, skull, middle ear, sinuses and teeth) expand. Untreated gas expansion in the abdominal cavity can cause diaphragmatic crowding resulting in decreased lung volume and expansion. The ear and sinuses must adjust as the cabin pressure changes. Flying with a cold, sinus infection or facial or head injuries may require decongestants or an altitude restriction.

5.2.1.1. An increase in altitude causes a decrease in barometric pressure (an example is a balloon expanding at altitude). If there is free air in the chest or cranium, the expanding air pressure will cause increased pressure within the structure. An altitude restriction is required. Consult the PMCC.

5.2.1.2. As altitude increases, the partial pressure of oxygen decreases. The actual available oxygen to the tissues decreases with altitude because oxygen molecules move farther apart. This may result in hypoxia or lower levels of oxygen to the tissues and cells.

5.2.1.3. The weight of a gas dissolved in a liquid is directly proportional to the weight of the gas above the liquid. An example is shaking a can of soda and opening it immediately. The balance of pressure is altered, releasing the bubbles of gas in the soda. The release of nitrogen bubbles into the blood after a flight or diving decompression causing the bends is another example. An altitude restriction is required. If the patient has conducted scuba diving operations 24 hours prior to entry into the AE system inform the AE crew.

5.2.2. Thermal Changes. Aircraft cabin temperature may fluctuate considerably. Temperatures may reach freezing or extremely high temperatures while on the ground. In-flight temperatures

tend to be cooler. Hyperthermia and hypothermia are seen in burns and frostbite. Both conditions increase the body's oxygen requirements.

5.2.3. Vibration. Mechanical energy is transferred to the tissues and increases muscle activity. Consider extra padding of suspected injuries to help diminish pain (i.e., fractures).

5.2.4. Fatigue. All of the stresses of flight induce fatigue to some degree.

5.3. Special Considerations.

5.3.1. A thorough primary and secondary preflight assessment, documentation and communication will improve patient outcomes.

5.3.1.1. Airway: Secure with C-Spine precautions as needed.

5.3.1.2. A Glasgow Coma Scale (GCS) less than 8 may indicate hypoxia and the patient may need to be intubated prior to flight.

5.3.1.3. Endotracheal or tracheostomy tubes are the best choice. Use sterile water or saline instead of air to inflate the balloons. Document the amount of fluid used.

5.3.1.3.1. Report tube size to PMRC

5.3.1.4. Breathing: Give humidified oxygen to maintain 90% saturation

5.3.1.5. Rule out tension pneumothorax. Use a Hemilich valve on chest tubes

5.3.1.6. Circulation: Control bleeding

5.3.1.6.1. Maintain IV fluids; keep track of intake and output

5.3.1.7. Immobilized fractures. Do not use air splints or MAST trousers in-flight

5.3.1.7.1. Plaster casts should be bi-valved prior to AE

5.3.1.8. Disability: Documented baseline GCS and vital signs preflight are essential

5.4. Head Injuries

5.4.1. Secure the airway, use caution with facial fractures

5.4.2. Elevate the head and torso to 30 degrees, if not contraindicated

5.4.3. Dress wounds

5.4.4. Check pupils, verbal response, clear drainage from ears or nasal passages

5.4.5. Secure the cervical area, as necessary

5.5. Thorax

5.5.1. Check breath sounds

5.5.2. Check for flail chest

5.5.3. Check for a mediastinum shift

5.5.4. Rule out hemothorax/pneumothorax or ruptured diaphram; securely tape Hemilich valve on chest tube, (the AE crew can provide Heimlich valve)

5.5.4.1. Report blood loss to PMRC and AE crew

5.5.5. Dress wounds as appropriate

5.6. Abdomen and Perineum

5.6.1. Check for obvious tenderness and tautness. Consider nasogastric tube and suction as required

5.6.2. Dress wounds. Apply dry dressings to open wounds. In the event of exposed bowel, cover with saline dressing or plastic to maintain moisture (if available). Do not insert bowel back into the abdominal cavity.

5.6.3. Prior to the insertion of a Foley catheter, if there has been an obvious or suspected abdominal injury, for males check the rectum/prostate for potential urethral tear, for females check for obvious vaginal bleeding. Use sterile water or saline instead of air to inflate the balloons.

5.7. Extremities

5.7.1. Stop hemorrhage, apply pressure dressings, and elevate the limb

5.7.2. Dress and splint as appropriate

5.7.3. Perform circulation and neurological checks; reapply dressings and splints as needed

5.8. Altitude Restrictions

5.8.1. The following injuries will require an altitude restriction to decrease the likelihood of any further injury/complications. When air is introduced into a cavity it will expand at altitude, having a potential of causing further injury:

5.8.1.1. Head injuries

5.8.1.2. Eye injuries

5.8.1.3. Traumatic chest and abdominal injuries

5.8.1.4. Decompression injuries (will require destination field elevation and 100% oxygen)

5.8.1.5. Injuries/complications involving the heart if severely compromised

NOTE: It is important to note that if there is an altitude restriction, the flight time will be lengthened. Inform the PMCC of the likelihood of an altitude restriction. The PMCC will also take into consideration the altitude of the origination and destination locations.

5.9. AE crew augmentation. Inform the PMCC in the event there is a requirement to have specialized medical personnel augment the AE crew.

6. Contingency Aeromedical Evacuation Elements.

6.1. During contingency operations, the Theater Aeromedical Evacuation System employs several elements to support AE command, control, communications, patient care, and system support. The following sections provide a brief description of the key elements.

6.2. Aeromedical Evacuation Control Team (AECT).

6.2.1. The AECT is the operations center where the overall planning, coordinating, and directing of AE operations are accomplished. The AECT is located in the Air Mobility Division of the Air Operations Center.

6.3. Aeromedical Evacuation Liaison Team (AELT).

6.3.1. The AELT provides a direct communications link and immediate coordination between the user service originating requirements for aeromedical evacuation, the AECT, and the PMRC. AELTs generally consist of Medical Service Corps officers, a flight nurse, and radio operators. AELTs are normally located at the echelon of the user service where casualty movements are authorized. Depending on the tactical operation being supported, AELTs can be collocated directly with a field medical facility or at any other level of command to ensure a smooth and coordinated casualty flow into the AE system. In addition, the AELT can be used at any AE element as a communications team as operations dictate.

6.4. Mobile Aeromedical Staging Facility (MASF).

6.4.1. The MASF is a mobile, tented, temporary staging facility deployed to provide supportive casualty nursing care and administration. MASFs are located near runways or taxiways of airfields or forward operating bases that are used by tactical airlift aircraft to resupply combat forces. No physicians are assigned to the MASF.

6.5. Aeromedical Staging Facility (ASF).

6.5.1. An ASF is a fixed medical facility located on or near an enplaning or deplaning air base or airstrip to provide patient reception, administrative processing, ground transportation, feeding, and limited medical care for patients entering, en route in, or leaving the aeromedical evacuation system. ASFs perform all of the functions of a MASF, except that they are not readily mobile. In addition, ASFs have physicians assigned.

6.6. Aeromedical Evacuation Crewmembers (AECM).

6.6.1. AE crews provide in-flight supportive nursing care aboard the evacuation aircraft. The crew is also responsible for ensuring the aircraft are properly configured and loaded. A standard AE crew normally consists of three personnel: one flight nurse and two aeromedical evacuation technicians. However, the crew may be tailored as the mission dictates, with double crews often assigned to missions with over 50 casualties.

6.7. Critical Care Air Transport Teams (CCATT).

6.7.1. CCATTs provide critical care augmentation to aeromedically evacuate injured, ill and/or burn patients requiring advanced care during transportation. They are available to assist the AE crews if a patient's condition dictates. A CCATT is comprised of three personnel: a physician who maybe an intensivist (cardiopulmonary), a critical care nurse, and a respiratory technician.

7. Aeromedical Evacuation Aircraft.

7.1. There are a variety of aircraft that are capable of performing the AE mission. They include, but are not limited to, the following:

7.2. C-9A Nightingale

7.2.1. The C-9A is capable of carrying 40 litter patients, or 40 ambulatory and four litter patients, or various combinations. The C-9A has eleven vacuum and therapeutic oxygen outlets, 25 liters of liquid oxygen are delivered from sidewall service panels, a 28 VDC outlet in a special care area, and twenty-two 115 VAC-60 hertz electrical outlets located throughout the cabin to permit the use

of cardiac monitors, respirators, incubators and infusion pumps. A hydraulically operated folding ramp allows efficient loading and unloading of litter patients and special medical equipment.

NOTE: The C-9A has no defensive capabilities and is not likely to be sent into an unsecured, hostile environment.

7.3. C-130 Hercules.

7.3.1. The C-130 can accommodate a maximum of 74 litter patients and AE crews, 80 ambulatory patients or a combination of the two. The C-130 has electrical 115v/400 AC cycle and 28 DC capability. The C-130 does not have oxygen outlets; oxygen for patient use must be carried on the aircraft.

7.4. C-141 Starlifter.

7.4.1. The standard C-141 configuration can carry 103 litters, a total of 160 seats, or a combination of the two. This aircraft may be fitted with aft-facing airline seats. The electrical system is 115v/400 cycle AC and 28 volt DC capability. 150 liters of oxygen is available for patient use when the system is full.

7.5. C-17 Globemaster III.

7.5.1. The C-17 has three sets of litter stanchions organic to the aircraft for a total of 9 litter patients. However, the C-17 is capable on configuring for 12 litter stanchions for a total of 36 patients. If the patients are floor-loaded a maximum capacity can be reached accommodating 48 patients on the main compartment floor and 12 additional patients can be placed on the ramp section. The electrical system is 110volt 60 cycle AC. 200 liters of oxygen is available for emergency and patient use when the system is full.

7.6. Other aircraft of opportunity can and are used for AE, these include the KC-135, C-21, C-5, and KC-10.

8. Aeromedical Evacuation Checklist (Attachment 2).

JAMES G. ROUDEBUSH, Brigadier General, USAF, MC, CFS
Command Surgeon

Attachment 1

GLOSSARY OF REFERENCE AND SUPPORTING INFORMATION

References

JP 4-02.2, *Joint Tactics, Techniques, and Procedures for Patient Movement in Joint Operations*

AFI 41-301, *Worldwide Aeromedical Evacuation System*

Holleran, (2nd Ed). (1996). *Flight Nursing: Principles and Practice*, St. Louis: Mosby-Year Book, Inc.

Lippincott, (6th Ed). (1996). *The Lippincott Manual of Nursing Practice*, Philadelphia: Lippincott-Raven Publishers

Abbreviations and Acronyms

ACLS—Advanced Cardiac Life Support

AE—Aeromedical Evacuation

AECT —Aeromedical Evacuation Control Team

AELT —Aeromedical Evacuation Liaison Team

AMC —Air Mobility Command

ASTS —Aeromedical Staging Squadron

ATLS —Advanced Trauma Life Support

CCATT —Critical Care Air Transport Teams

GCS —Glasgow Coma Scale

GPMRC —Patient Movement Requirements Center

MASF —Mobile Aeromedical Staging Facility

PMCC —Patient Movement Clinical Coordinator

PMRC —Patient Movement Requirements Center

TACC —Tanker Airlift Control Center

TPMRC —Theater Patient Movement Centers

TPMRC-E —Theater Patient Movement Requirements Center – Europe

TMPRC-P—Theater Patient Movement Requirements Center – Pacific

Attachment 2

MISSION INFORMATION

DATE: _____

MISSION INFORMATION (One patient per page): ***NOTE:*** If the political/operational climate is such that information below cannot be given, inform the PMCC.

1. INDIVIDUAL ANNOTATING INFORMATION AND PHONE NUMBER:
2. VALIDATING PHYSICIAN:
3. HOSPITAL/CLINIC NAME:
4. PATIENT'S NAME AND RANK:
6. PATIENT'S SSN:
7. PATIENT'S COMMAND AND ORGANIZATION:
8. NATURE OF INJURY:
9. DIAGNOSIS:
10. VITAL SIGNS:
11. PATIENT EQUIPMENT REQUIRED FOR MISSION
12. MEDICAL AUGMENTATION PERSONNEL REQUIRED FOR MISSION
13. CATEGORY:
14. REQUESTED MOVEMENT DATE:
15. DESTINATION (The PMRC normally determines the appropriate destination, but in special situations the destination may be pre-identified, such as special operations force (SOF) personnel):
16. REQUESTED AIRFIELD FOR PICK-UP:
9. MAJCOM POINT OF CONTACT TO BE NOTIFIED (Name and phone number):
10. OTHER CONTACTS, IF ANY (Name and phone number):
11. PMCC NOTIFIED (Name, date and time):

TELEPHONE NUMBERS:

GPMRC
DSN 779-6241
TOLL FREE 1-800-874-8966
COM. (618) 229- 6241
FAX DSN: 779-3539/8892

TACC
DSN 779-1913/5434
COM. (618)229-1913

TPMRC-E
DSN: 480-2264/8040
COM: (49) 6371-47-8040

TPMRC-P
DSN 225-4700/4857
COM:001-81-3117-55-2511

NOTE: THE PMRC WILL VALIDATE THE PATIENT REQUIREMENT. THE THEATER AIR MOBILITY OPERATIONS CONTROL CENTER (AMOCC) OR TANKER AIRLIFT CONTROL CENTER WILL EXECUTE AIRLIFT.